

OTAY CROSSINGS COMMERCE PARK

APPENDIX F
BIOLOGICAL RESOURCES REPORTS
to the
DRAFT SUPPLEMENTAL
ENVIRONMENTAL IMPACT REPORT

EIR 93-19-006Q, TM 5405RPL⁷
SCH No. 2006041039

Lead Agency:

County of San Diego
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AUGUST 2011

OTAY CROSSINGS COMMERCE PARK

**ON-SITE REVEGETATION PLAN
SPA 04-006, TM5405RPL4**

May 11, 2010

Project Proponent :

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500 Stevens Avenue, Suite 208
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Prepared by :

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Otay Crossings Commerce Park On-site Revegetation Plan

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	INTRODUCTION.....	1
2.0	PROJECT DESCRIPTION.....	1
2.1	Responsible Parties	1
2.2	Project Location	1
2.3	Project Summary.....	1
2.3.1	Vegetation Communities	2
2.3.1.1	Tamarisk Scrub	2
2.3.1.2	Disturbed Wetland	2
2.3.1.3	Native Grassland.....	3
2.3.1.4	Diegan Coastal Sage Scrub (including disturbed)	3
2.3.1.5	Non-native Grassland.....	3
2.3.1.6	Eucalyptus Woodland	3
2.3.1.7	Agriculture	4
2.3.1.8	Disturbed Habitat	4
2.3.1.9	Developed	4
2.3.1.10	Road Pools with Fairy Shrimp.....	4
2.3.2	Wildlife	4
2.3.3	Sensitive Species.....	5
2.3.4	Sensitive Resources Affected.....	5
2.3.5	Types, Functions, and Values of Habitat to be Restored	5
2.4	Goals of Compensatory Mitigation.....	6
2.4.1	Responsibilities.....	6
2.4.1.1	Project Proponent.....	6
2.4.1.2	County of San Diego/Resource Agencies	6
2.4.1.3	Compensatory Mitigation Project Designer.....	7
2.4.1.4	Installation Contractor.....	7
2.4.1.5	Restoration Specialist.....	7
2.4.1.6	Revegetation Maintenance Contractor.....	7
2.4.2	Types and Areas of Habitat to be Established	8
2.4.3	Functions and Values.....	8
2.4.4	Time Lapse.....	8
2.4.5	Cost	8
2.5	Description of the Proposed Compensatory Mitigation Site	9
2.5.1	Site Selection	9
2.5.2	Location and Size of Compensatory Mitigation Site	9
2.5.3	Functions and Values.....	9
2.5.4	Jurisdictional Delineation	9
2.5.5	Present and Proposed Uses	10

TABLE OF CONTENTS (cont.)

<u>Section</u>	<u>Title</u>	<u>Page</u>
2.0	PROJECT DESCRIPTION (cont.)	
2.6	Implementation Plan	10
2.6.1	Rationale for Expecting Implementation Success	11
2.6.2	Financial Assurances.....	11
2.6.3	Schedule.....	11
2.6.4	Site Preparation.....	11
2.6.5	Planting Plan	12
2.6.6	Irrigation Plan	13
2.7	Maintenance During Monitoring	14
2.7.1	Maintenance Activities	14
2.7.1.1	General Maintenance	14
2.7.1.2	Non-native Plant Control	14
2.7.1.3	Invasive Plant Control.....	15
2.7.1.4	Other Pests	15
2.7.1.5	Fertilization.....	15
2.7.1.6	Pruning.....	15
2.7.1.7	Sensitive Species Issues	15
2.7.2	Schedule.....	15
2.8	Monitoring Plan	16
2.8.1	Performance Standards for Target Dates and Success Criteria.....	16
2.8.2	Target Functions and Values.....	18
2.8.3	Target Hydrological Regime.....	18
2.8.4	Target Acreages	19
2.8.5	Monitoring Methods	19
2.8.6	Monitoring Schedule.....	20
2.8.7	Monitoring Reports.....	20
2.9	Completion of Compensatory Mitigation	20
2.10	Contingency Measures	20
2.10.1	Initiating Contingency Measures	20
2.10.2	Alternative Locations for Contingency Compensatory Mitigation.....	21
2.10.3	Funding	21
3.0	REFERENCES	22

APPENDIX

<u>Letter</u>	<u>Title</u>
A	Animal Species Observed

LIST OF FIGURES

<u>Number</u>	<u>Title</u>	<u>Follows Page</u>
1	Regional Location Map.....	2
2	Project Location Map.....	2
3	Vegetation and Sensitive Species	6
4	Revegetation Locations.....	10
5	Central Channel Creation Area	12
6	Southeast Channel Restoration Area	12

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
1	Impacts to Jurisdictional Areas and Fairy Shrimp Habitat	6
2	Combined Mitigation Requirements.....	8
3	Existing Jurisdictional Areas on the Project Site.....	10
4	Riparian Scrub/Floodplain Scrub Seed Mix	12
5	Riparian Scrub/Floodplain Scrub Container Plant Palette.....	13
6	Maintenance Monitoring Schedule	16
7	Species Richness Success Criteria	17
8	Vegetative Cover Success Criteria.....	18

1.0 INTRODUCTION

This report provides the compensatory mitigation plan for direct impacts to tamarisk scrub, non-wetland Waters of the U.S./streambed, and San Diego marsh-elder (*Iva hayesiana*) resulting from implementation of the Otay Crossings Commerce Park project (proposed project). The mitigation measures identified herein are based on those contained in the Otay Crossings Commerce Park Biological Technical Report (HELIX Environmental Planning, Inc. [HELIX] 2010). The proposed mitigation is intended to meet the requirements of U.S. Army Corps of Engineers (Corps) Section 404 Nationwide 39 Permit, California Department of Fish and Game (CDFG) Section 1602 Streambed Alteration Agreement, Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification, and County of San Diego's (County's) Resource Protection Ordinance (RPO) and Biological Mitigation Ordinance (BMO). Tamarisk scrub and non-wetland Waters of the U.S./streambed restoration proposed in this plan would occur on site.

2.0 PROJECT DESCRIPTION

2.1 RESPONSIBLE PARTIES

Kearny PCCP Otay 311, LLC will be responsible for carrying out the required mitigation and monitoring for the Otay Crossings Commerce Park project. Contact information is provided below.

Kearny PCCP Otay 311, LLC
655 W. Broadway, Ste. 1600
San Diego, CA 92101
(619) 702-8130
Contact: John Bragg

2.2 PROJECT LOCATION

The 311.5-acre project site is located in the extreme southeastern portion of Otay Mesa within San Diego County (Figure 1). The property lies to the southeast of the intersection of Otay Mesa and Alta roads just north of the U.S./Mexico border. It occupies portions of Sections 31 and 32 within Township 18 South, Range 1 East of the U.S. Geological Survey 7.5-minute Otay Mesa quadrangle (Figure 2). The site is within the East Otay Mesa Specific Plan (EOMSP) area and contains areas designated in the County's Multiple Species Conservation Program (MSCP; County 1997) as Major Amendment Areas, Minor Amendment Areas, and Minor Amendment Areas Subject to Special Consideration.

2.3 PROJECT SUMMARY

The proposed Otay Crossings Commerce Park project site is a Tentative Map (TM) and Preliminary Grading Plan (Tract 5405) for land designated for Mixed Industrial, Rural

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Residential, and State Route ([SR]; i.e., SR-11) use in Subarea 2 of the EOMSP. The TM would subdivide the 311.5-acre property into 56 industrial lots ranging in size from 0.9 net acre to 95.4 net acres. The future right-of-way for SR-11 and the new Port Of Entry (assumes the selected western alternative) have been tentatively mapped on 2 of the 56 proposed lots, covering approximately 120.0 acres of the site. In addition to proposed on-site development, off-site road improvements will be required along portions of Otay Mesa Road, Alta Road, and Airway Road, and off-site sewer facilities will be required along Alta Road and Via De La Amistad. Approximately 47.4 acres of open space would be preserved along the southern and northeastern portions of the site.

The irregularly shaped project site consists of low rolling hills and mesas and includes several narrow drainages that convey flows to the south. Elevations on site range from approximately 480 feet above mean sea level (AMSL) at points along the southern boundary to approximately 700 feet AMSL in the site's northeastern corner. Soils in the northern/northwestern portion of the site are characterized by Diablo clay, while slopes in the southern/southwestern portion are characterized by Huerhuero loam (Bowman 1973). Several dirt roads cross the site and are regularly traveled by the U.S. Border Patrol.

Surrounding land uses include an auto auction lot on the northwestern boundary, industrial public uses to the west, and a mix of industrial, commercial, and residential uses across the Mexico border. The parcel to the north is currently being graded for development. Undeveloped lands extend to the east of the site into the foothills of the San Ysidro Mountains.

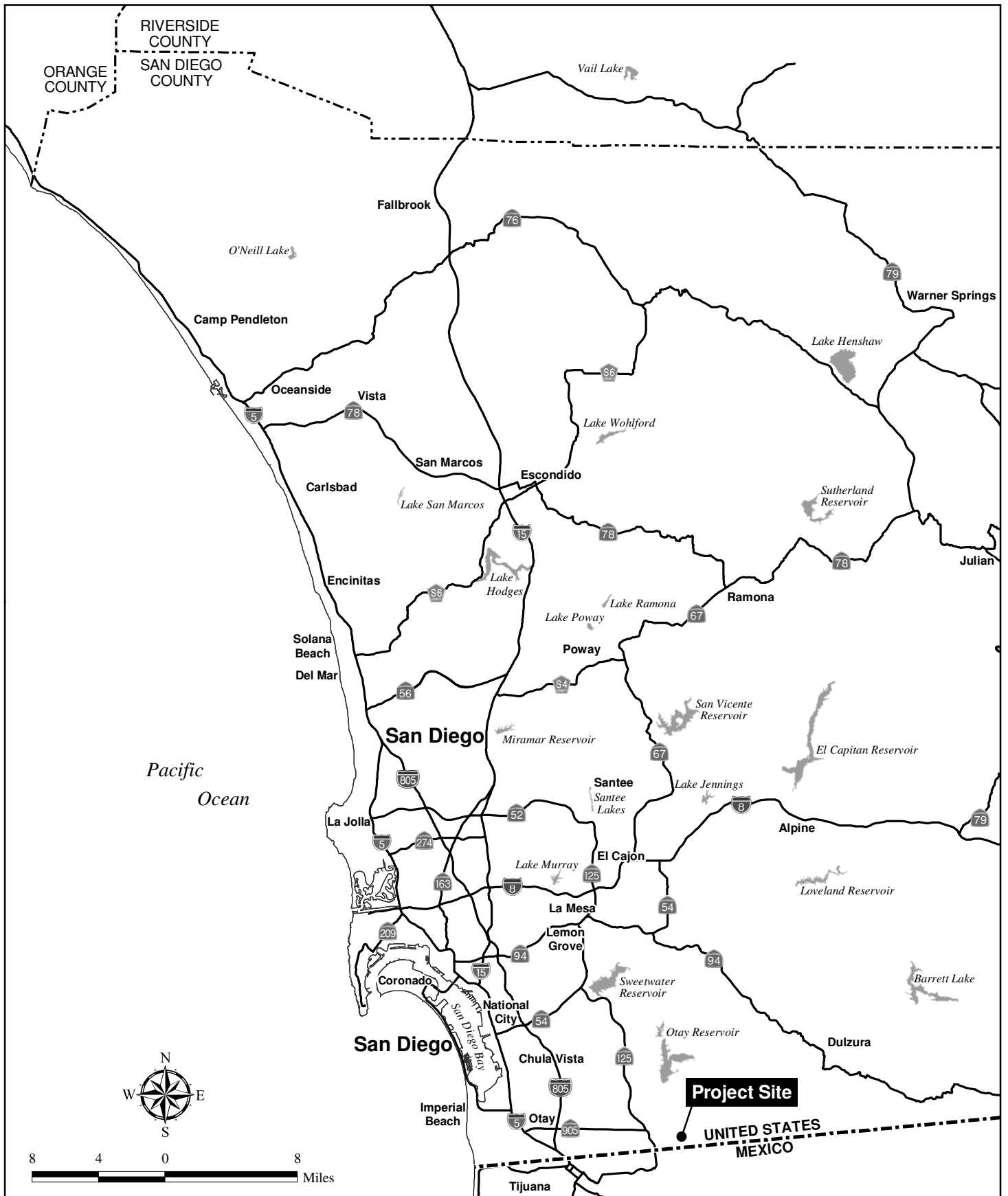
2.3.1 Vegetation Communities

2.3.1.1 Tamarisk Scrub

Tamarisk scrub is a shrubby vegetation type dominated by its namesake, tamarisk (*Tamarix* sp.), a non-native species that replaces native vegetation subsequent to major disturbance. Because of its deep root system and high evapotranspiration rates, tamarisk can substantially lower the water table to below the root zone of native species, thereby competitively excluding them. As a prolific seeder, it is able to rapidly replace native species. Four small stands of tamarisk scrub occur on site: 2 occur in drainages in the northern part of the site and the other 2 occur as isolated stands within non-native grassland. Approximately 0.97 acre of tamarisk scrub occurs on site, of which 0.73 acre occurs along drainages.

2.3.1.2 Disturbed Wetland

This community is dominated almost exclusively by exotic wetland species within areas that have undergone periodic disturbances. Characteristic species include cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispus*), broom baccharis (*Baccharis sarothroides*), and tamarisk. A total of 0.03 acre of disturbed wetland occurs on site within a drainage in the southeastern corner of the property.

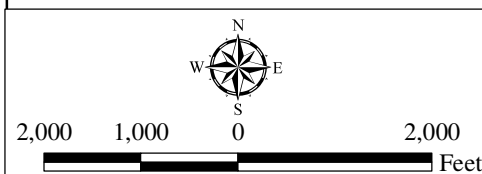
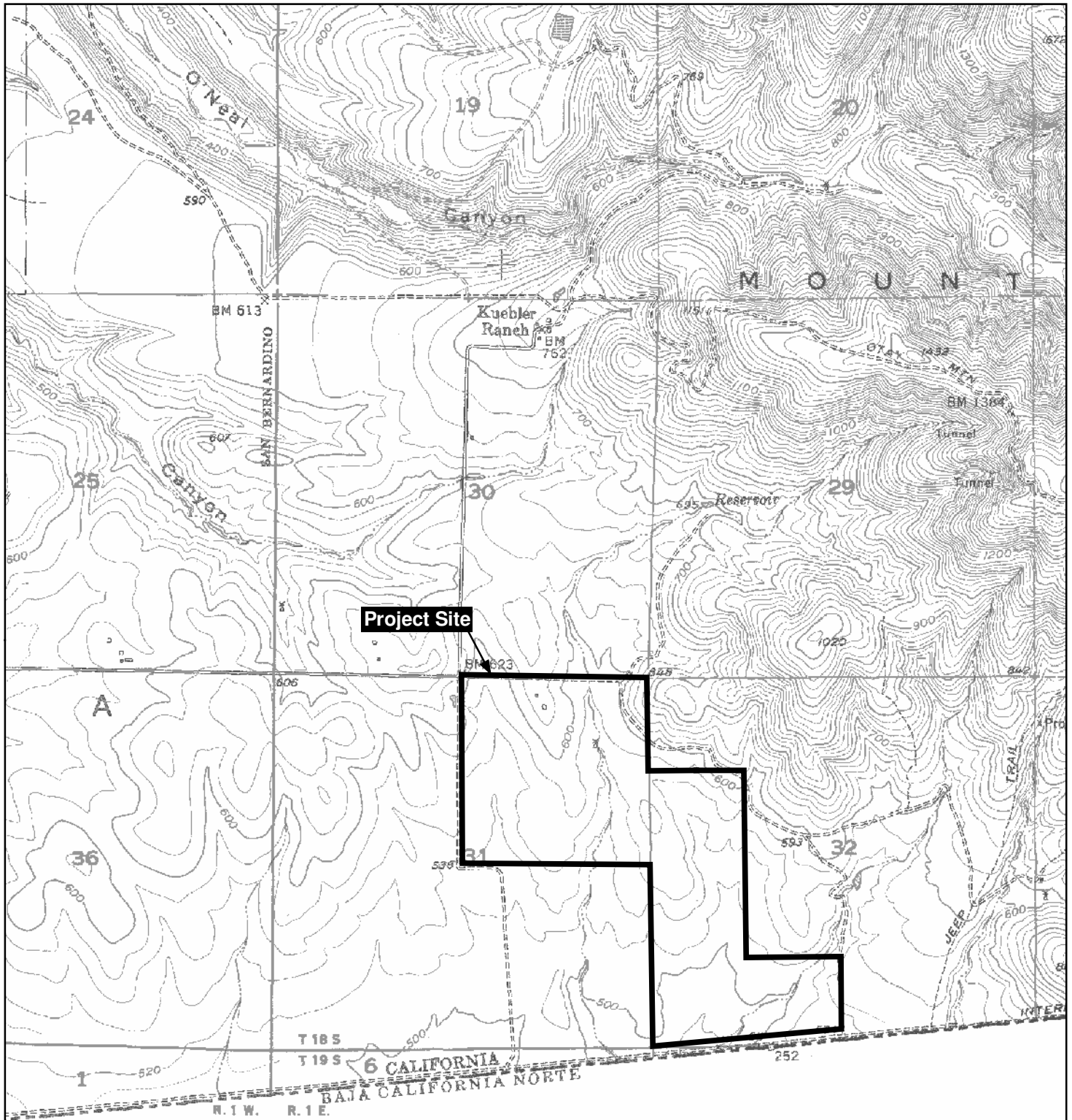


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Regional Location Map

OTAY CROSSINGS COMMERCE PARK

Figure 1



Job No: KRE-02 Date: 03/04/09

Source: USGS 7.5' Quads; Otay Mesa

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Project Location Map

OTAY CROSSINGS COMMERCE PARK

Figure 2

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2.3.1.3 Native Grassland

Native grassland is a community dominated by perennial native grasses. The majority of native grasslands in California have been displaced by non-native grassland dominated by introduced annual species; however, native grasslands persist in areas as small isolated islands. Approximately 0.1 acre of native grassland occurs alongside a drainage in the off-site improvement areas. These patches are dominated by saltgrass (*Distichlis spicata*) intermingled with upland non-native grasses such as oats (*Avena* spp.).

2.3.1.4 Diegan Coastal Sage Scrub (including disturbed)

Coastal sage scrub is 1 of the 2 major shrub types that occur in California. This habitat type occupies xeric sites characterized by shallow soils. Sage scrub is dominated by subshrubs whose leaves abscise during drought. The Diegan coastal sage scrub on site contains a diverse suite of plant species, including California sagebrush (*Artemisia californica*), black sage (*Salvia mellifera*), coyote brush (*Baccharis pilularis*), and laurel sumac (*Malosma laurina*). Approximately 8.7 acres of Diegan coastal sage scrub (including 0.9 acre of disturbed) occur in patches on 3 hills in the eastern portion of the site. An additional 0.1 acre of Diegan coastal sage scrub occurs in the off-site improvement areas.

2.3.1.5 Non-native Grassland

Non-native grassland areas may have supported native grassland in the past, but have been overrun by exotic, introduced annuals. The flora of non-native grasslands includes a dense to sparse cover of introduced grasses and often numerous species of showy-flowered, native annual forbs (Holland 1986). This habitat is often associated with deep, fine-textured soils with some clay content. Introduction of exotic grasses in California due to grazing and agricultural practices, coupled with severe droughts, has contributed to the conversion of native grasslands to non-native grassland (Jackson 1985). Whereas native grasslands supported mostly perennials, such as needlegrass (*Nasella* sp.), non-native grasslands (including those on site) support mostly annuals. Regardless of species composition, grasslands throughout the County serve as valuable raptor foraging habitat and may have additional value if they support native forbs. Characteristic species of the non-native grasslands on site include oats, red brome (*Bromus madritensis* ssp. *rubens*), ripgut (*B. diandrus*), ryegrass (*Lolium* sp.), and mustard (*Brassica* sp.). Portions of the site, especially in the central and northeastern areas, are dominated by mustard. Non-native grassland is the dominant vegetation community on site, covering approximately 278.5 acres. An additional 19.0 acres of non-native grassland occur in the off-site improvement areas.

2.3.1.6 Eucalyptus Woodland

Eucalyptus woodland is dominated by eucalyptus (*Eucalyptus* sp.), an introduced tree species. This species is often planted purposely but can also spread under appropriate conditions. Approximately 1.0 acre of eucalyptus woodland occurs on site.

2.3.1.7 Agriculture

A small portion of an off-site agricultural field is mapped within the property boundary in the eastern portion of the site, comprising less than 0.1 acre. Approximately 0.7 acre of agriculture is mapped in the off-site improvement areas.

2.3.1.8 Disturbed Habitat

Disturbed habitat supports either no vegetation or a cover of non-native weedy species that are adapted to a regime of frequent disturbance. Many of the characteristic species of this habitat are also indicator species of annual grasslands, although disturbed areas tend to be dominated more by forbs than grasses. Characteristic species include mustard, star thistle (*Centaurea melitensis*), fennel (*Foeniculum vulgare*), and Russian thistle (*Salsola tragus*). Disturbed areas, namely dirt roads associated with Border Patrol activities, cover approximately 22.2 acres on site, and an additional 5.0 acres occur in the off-site improvement areas.

A total of 34 water-holding basins were originally mapped within disturbed habitat on site, including 3 vernal pools and 31 road pools. A basin is considered a vernal pool if it supports plants identified as vernal pool species by Zedler (1987). Natural basins that support no vernal pool species or that occur in drainages are defined as road pools. The Border Patrol's recent border fence construction eliminated the 3 vernal pools, which were located in a disturbed area along the southern boundary of the site. As a result, the site currently supports 31 road pools totaling 0.20 acre. Five road pools, totaling 0.05 acre, occur in the off-site road improvement areas.

2.3.1.9 Developed

Developed areas include paved roads and existing developments with industrial or commercial land uses on site. The project site contains less than 0.1 acre of developed land, and an additional 5.7 acres occur in the off-site improvement areas.

2.3.1.10 Road Pools with Fairy Shrimp

Road pools are distinguished from vernal pools by the absence of vernal pool indicator plant species. A total of 31 road pools occur on site, and 5 road pools off site. Only 2 of these pools support San Diego fairy shrimp (*Branchinecta sandiegonensis*) and Riverside fairy shrimp (*Streptocephalus woottoni*), the remainder do not support listed species. Road pools are not a sensitive habitat requiring mitigation unless they support listed species.

2.3.2 Wildlife

A total of 55 animal species, including 18 invertebrates, 1 amphibian, 4 reptiles, 29 birds, and 3 mammals, were observed on the project site during various biological surveys, and are included in Appendix A.

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2.3.3 Sensitive Species

Seven sensitive plant species were observed on the project site during rare plant surveys: Otay tarplant (*Deinandra conjugens*), California adolphia (*Adolphia californica*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder, variegated dudleya (*Dudleya variegata*), San Diego County viguiera (*Viguiera laciniata*), and small-flowered morning glory (*Convolvulus simulans*; Figure 3).

Eleven sensitive animal species were observed/detected on site during various field surveys: San Diego fairy shrimp, Riverside fairy shrimp, Quino checkerspot butterfly (QCB; *Euphydryas editha quino*), western spadefoot (*Spea hammondi*), coastal western whiptail (*Cnemidophorus tigris multiscutatus*), burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), grasshopper sparrow (*Ammodramus savannarum*), and white-tailed kite (*Elanus leucurus*; Figure 3).

2.3.4 Sensitive Resources Affected

On- and off-site project development would cause direct impacts to approximately 293.6 acres of upland vegetation communities, comprising approximately 0.1 acre of native grassland, 2.0 acres of Diegan coastal sage scrub (including 0.3 acre of disturbed), 263.3 acres of non-native grassland, 1.0 acre of eucalyptus woodland, 0.7 acre of agriculture, 20.8 acres of disturbed habitat, and 5.7 acres of developed land.

Impacts to Corps jurisdictional areas would total 0.20 acre, including 0.19 acre of non-wetland Waters of the U.S. on site and 0.01 acre off site. Impacts to CDFG jurisdictional areas would total 0.97 acre, including on-site impacts to 0.73 acre of tamarisk scrub and 0.23 acre of streambed, and off-site impacts to 0.01 acre of streambed. None of the areas impacted is considered jurisdictional under the RPO.

All Otay tarplant, variegated dudleya, and California adolphia in the project site are outside the limits of development and would not be directly impacted; however, 72 of the 193 (37 percent) San Diego barrel cacti and all 138 of San Diego marsh-elder, both of which are County Group B species, would be impacted. Four of the 9 burrowing owl locations would be directly or indirectly impacted. Locations of 2 of the 3 QCB observed on site during 2001 focused surveys also occur within the impact footprint. Habitat occupied by Riverside fairy shrimp, San Diego fairy shrimp, western spadefoot, coastal western whiptail, California horned lark, loggerhead shrike, grasshopper sparrow, and northern harrier would also be impacted.

2.3.5 Types, Functions, and Values of Habitat to be Restored

Revegetation/restoration required for project impacts to Corps and CDFG jurisdictional areas (tamarisk scrub and non-wetland Waters of the U.S./streambed; Table 1), and San Diego marsh-elder are addressed in this revegetation plan. Other direct project impacts requiring mitigation are addressed through habitat-based mitigation discussed in the biological technical report (HELIX 2010) as well as separate mitigation plans for those resources.

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Table 1 IMPACTS TO JURISDICTIONAL AREAS AND FAIRY SHRIMP HABITAT*		
HABITAT TYPE	CORPS Impacts	CDFG Impacts
Tamarisk scrub	0.00	0.73
Non-wetland Waters of the U.S./Streambed	0.20	0.24
Basin supporting fairy shrimp	0.00	<0.01**
TOTAL	0.20	0.97

*Areas are presented in acre rounded to the nearest 0.01

**Approximately 116 square feet/0.002 acre

All habitats to be impacted are of low quality. Tamarisk scrub is dominated by non-native, highly invasive tamarisk, and provides only limited function as temporary shelter for birds and small mammals. The impacted streambeds are narrow, ephemeral drainages that are primarily unvegetated and/or are invaded by upland grasses or filled with dried Russian thistle. A portion of 1 impacted streambed supports approximately 138 San Diego marsh-elder individuals. Functions of the streambeds may include limited flood control, infiltration, and wildlife habitat.

2.4 GOALS OF COMPENSATORY MITIGATION

The goal of the restoration plan is to replace functions and services associated with the tamarisk scrub and streambed lost as a result of the proposed project, and replace impacted San Diego marsh elder.

2.4.1 Responsibilities

2.4.1.1 Project Proponent

Kearny PCCP Otay 311, LLC would be responsible for financing the installation, maintenance, and monitoring of the mitigation effort.

2.4.1.2 County of San Diego/Resource Agencies

As part of the monitoring program, annual reports prepared by the restoration specialist would be submitted to the County and resource agencies for review. It is the County's and resource agencies' prerogative to review these reports for completeness and to participate in annual site inspections, as well as determining the success of the mitigation effort.

2.4.1.3 Compensatory Mitigation Project Designer

A licensed landscape architect would prepare necessary construction documents, including grading, irrigation, and planting plans. This person would inspect the irrigation system and assist in other inspections (e.g., plant deliveries) as necessary. A registered civil engineer would prepare plans for rough grading.

2.4.1.4 Installation Contractor

The installation contractor will have wetland habitat restoration experience, be under the direction of the restoration specialist, and be responsible for completion of grading, pre-planting weed control, planting, seeding, and maintenance of the mitigation areas. The restoration specialist would educate the contractor(s) on the installation of riparian scrub species.

After the installation contract is completed, the project proponent(s) would hire a maintenance contractor for the duration of the 5-year monitoring period. The maintenance contractor and the installation contractor may be the same entity. The project proponent may change contractors at its discretion. The maintenance contractor will be educated as to the maintenance of native plant habitat and the difference between native plants and weeds. The maintenance contractor would service the entire restoration areas at least once per month. Service would include but not be limited to weed control, trash removal, watering, fence repair, dead plant replacement, and re-seeding. All activities conducted would be seasonally appropriate and approved by the restoration specialist. The maintenance contractor would meet the restoration specialist at the site when requested and would perform all checklist items in a timely manner, as directed by the project proponent.

2.4.1.5 Restoration Specialist

Overall supervision of the installation, maintenance, and monitoring of the mitigation effort would be the responsibility of a habitat restoration specialist with riparian restoration experience. The habitat restoration specialist would educate all participants with regard to mitigation goals and requirements, and directly oversee grading, irrigation installation, and planting. If necessary, the habitat restoration specialist would provide the permittee and contractor with a brief report, including a written list of items in need of attention, following each monitoring visit. The habitat restoration specialist would notify the contractor and responsible party if any requested remediation is not addressed.

The habitat restoration specialist would be a permitted biologist who would directly supervise all riparian scrub restoration and maintenance.

2.4.1.6 Revegetation Maintenance Contractor

After the installation contract is completed, the project proponent(s) would hire a maintenance contractor for the duration of the 5-year monitoring period. The maintenance contractor and the installation contractor may be the same entity. The project proponent may change contractors at its discretion. The maintenance contractor will be educated as to the maintenance of native plant

habitat and the difference between native plants and weeds. The maintenance contractor would service the entire restoration area at least once per month. Service would include but not be limited to weed control, trash removal, watering, fence repair, dead plant replacement, and re-seeding. All activities conducted would be seasonally appropriate and approved by the restoration specialist. The maintenance contractor would meet the restoration specialist at the site when requested and would perform all checklist items in a timely manner, as directed by the project proponent.

2.4.2 Types and Areas of Habitat to be Established

Mitigation for impacts to 0.24 acre of unvegetated streambed and 0.73 acre of tamarisk scrub will consist of 0.97 acre of streambed/riparian scrub/floodplain scrub creation and restoration (Table 2).

Table 2 COMBINED MITIGATION REQUIREMENTS					
Impacts		Mitigation			
Habitat Type	Area (acre)	Ratio	Area (acre)	Created/Restored Habitat Type	Agencies with Jurisdictional Oversight
Streambed (64200)	0.24	1:1	0.24	Streambed (64200)	County, Corps, CDFG, RWQCB
Tamarisk scrub (63810)	0.73	1:1	0.73	Riparian scrub/ floodplain scrub (63300)	County, CDFG, RWQCB
TOTAL	0.97	--	0.97	--	--

*Vegetation codes are from Oberbauer (2008)

2.4.3 Functions and Values

Riparian scrub/floodplain scrub and streambed creation and restoration will provide wildlife habitat, nutrient removal and cycling, infiltration, and flood control functions. Values include flood abatement and pollutant uptake, as well as aesthetics and perpetuation of sensitive species (San Diego marsh-elder).

2.4.4 Time Lapse

Because the riparian scrub/floodplain scrub and streambed creation and restoration are proposed to be conducted within graded channels on site, the restoration cannot be implemented until the grading is complete. Restoration would occur immediately upon completion of site grading.

2.4.5 Cost

Installation and materials for the restoration, including grading and maintenance as well as 5 years of biological monitoring and reports, are anticipated to cost approximately \$150,000.

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2.5 DESCRIPTION OF THE PROPOSED COMPENSATORY MITIGATION SITE

2.5.1 Site Selection

The sites chosen for riparian scrub/floodplain scrub and streambed restoration are essentially a relocated channel that will be widened in the central portion of the site, and a re-graded channel in the southeastern portion of the site (Figure 4). The soil and landscape characteristics are the same as those in the impacted drainages with the exception that the channel will be wider in both locations. The constructed drainage will traverse lots proposed for development and would not be subject to weed invasion from plants categorized as High or Moderate on the California Invasive Plant Council (Cal-IPC) 2006 list because such plants would not be allowed as part of the landscape plan for the project. The creation areas will be easily accessible for maintenance and monitoring activities, but would not be accessible to vehicular traffic. The constructed drainage in the central portion of the site will also be suitable for establishment of San Diego marsh-elder, which is a target species being restored on site, and which prefers open, sparsely vegetated drainages. Soils will be assessed to confirm that they are appropriate for riparian scrub/floodplain scrub restoration. If necessary, soils will be salvaged for use in the restoration area.

2.5.2 Location and Size of Compensatory Mitigation Site

The 0.97 acre of streambed and riparian scrub/floodplain scrub creation/restoration will occur within the northern half of the project site, at approximately 32°33'15" north latitude, 116°54'11" west longitude, and UTM 36 02 000 North/5 09 000 East and the southeastern portion of the site at approximately 32°33'47" north latitude, 116°54'50" west longitude, and UTM 3602852 North/491916.28 East.

2.5.3 Functions and Values

The areas proposed for riparian scrub/floodplain scrub/streambed creation/restoration are upland areas supporting non-native grassland for the central drainage creation area, and non-native grassland and streambed in the restoration area in the southeastern portion of the site. The functions and values of these areas include wildlife habitat, potential agricultural land, and aesthetics. Percent cover by native/non-native species was not determined for these areas. Because the existing drainage in the southeastern portion of the site will be restored in place, this portion of the mitigation is considered restoration rather than creation.

2.5.4 Jurisdictional Delineation

A delineation of jurisdictional areas on the project site was performed by HELIX biologists on April 26 and 28, 2000, and updated on October 24, 2000. The delineation fieldwork included areas proposed for compensatory mitigation; however, these areas are currently uplands. The jurisdictional delineation was verified in the field for Waters of the U.S. by Stacey Jensen and Laurie Monarres of the Corps on March 30, 2006.

Corps jurisdictional areas comprise 0.34 acre on site and 0.01 acre within the off-site improvement areas (Table 3). CDFG jurisdictional areas comprise 1.12 acres on site and 0.01 acre within the off-site improvement areas (Table 3). In total, 0.73 acre of tamarisk scrub, 0.03 acre of disturbed wetland, and 0.36 acre of streambeds were mapped as CDFG habitat for the project (HELIX 2006). An additional 0.24 acre of tamarisk scrub occurring on site was not considered CDFG jurisdictional, as these areas do not occur along CDFG streambeds. County RPO wetlands include 0.03 acre of disturbed wetland in the southeastern corner of the site (Table 3).

**Table 3
EXISTING JURISDICTIONAL AREAS ON THE PROJECT SITE***

JURISDICTIONAL AREA	CORPS		CDFG		COUNTY	
	On Site	Off Site	On Site	Off Site	On Site	Off Site
Tamarisk scrub	0.00	0.00	0.73	0.00	0.00	0.00
Disturbed wetland	0.03	0.00	0.03	0.00	0.03	0.00
Non-wetland Waters of the U.S./ Streambed	0.31	0.01	0.36	0.01	0.00	0.00
Subtotal	0.34	0.01	1.12	0.01	0.03	0.00
TOTAL	0.35		1.13		0.03	

*Areas are presented in acre rounded to the nearest 0.01

2.5.5 Present and Proposed Uses

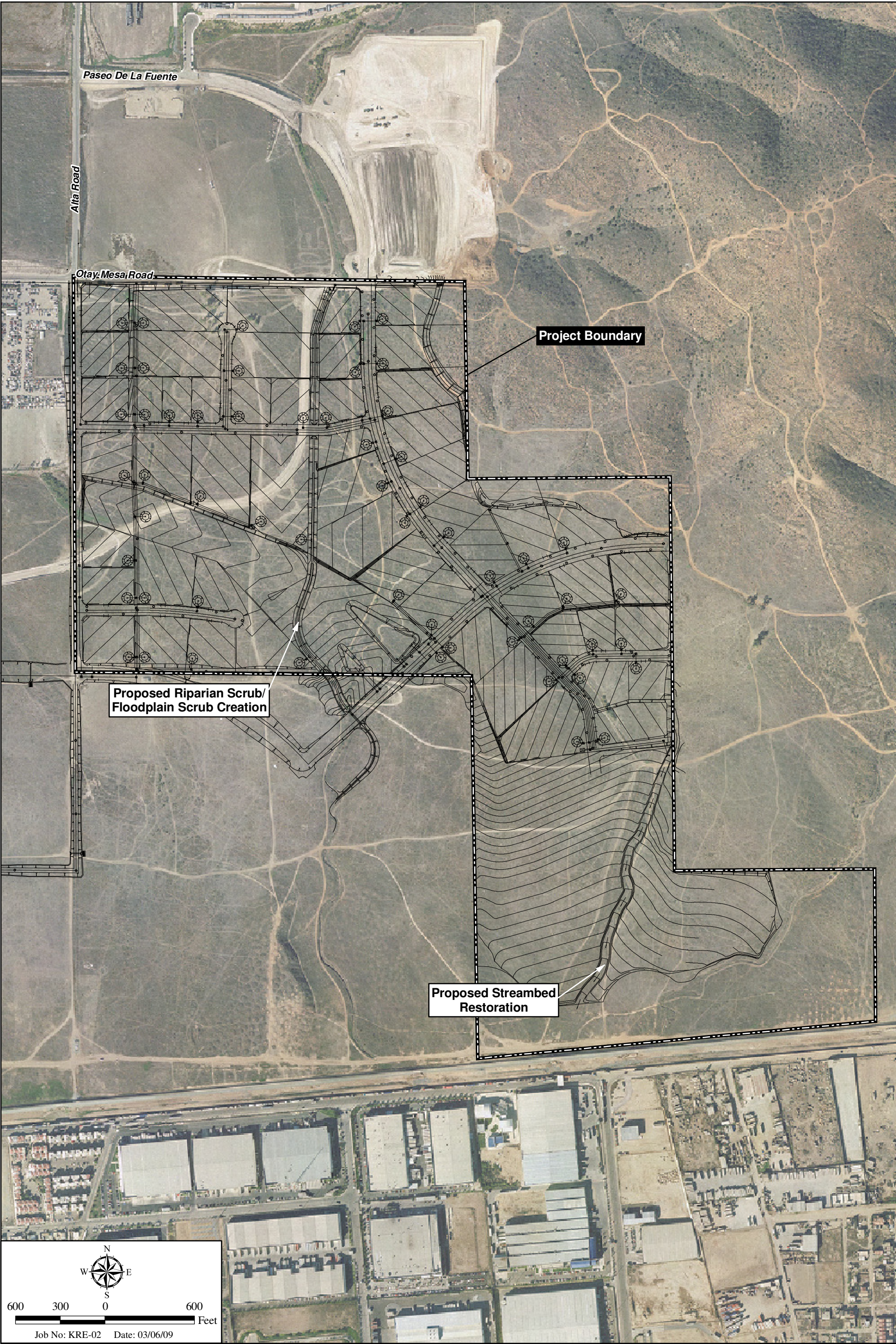
The proposed riparian scrub/floodplain scrub creation area and adjacent lands are currently undeveloped. The creation areas will be used as mitigation for impacts to tamarisk scrub and non-vegetated streambed and will convey runoff through the project site. The restoration area will be used for streambed restoration. Lands adjacent to the creation and restoration areas will be developed for commercial/industrial uses.

2.6 IMPLEMENTATION PLAN

The restoration specialist will monitor habitat restoration installation activities including grading, installation of irrigation, planting, and seeding. Installation monitoring will include attendance at one pre-construction meeting, full time monitoring during grading activities, and daily monitoring of the site during the remainder of the installation period. Specifically, the restoration specialist will:

- Document pre-construction site status by designating permanent photo locations;
- Ensure that installation personnel understand the project requirements and limitations;
- Inspect perimeter fencing of the restoration site prior to the start of grading;
- Monitor all grading activities;

HELIX



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Revegetation Locations

OTAY CROSSINGS COMMERCE PARK



Figure 4

- Ensure that grading is appropriate to support the target habitat types;
- Ensure that the irrigation system is installed correctly;
- Inspect plant and seed material prior to installation;
- Monitor the manner in which the plant and seed material is installed; and
- Prepare a letter for submittal to the appropriate regulatory agencies (e.g., Corps, CDFG, RWQCB, U.S. Fish and Wildlife Service, and County) stating that the installation is complete.

The 5-year maintenance and monitoring period will begin after County and resource agency staff have field verified that all planting has been installed.

2.6.1 Rationale for Expecting Implementation Success

The compensatory mitigation program is expected to be successful because the riparian scrub/floodplain scrub and streambed-creation areas are essentially a realignment of an existing drainage that currently receives flows from north of the project for the central drainage, and re-grading and restoring in place the channel in the southeastern portion of the site. The flows within the created channels are anticipated to be similar to flows in the existing channels, which would be appropriate for the target habitats of riparian scrub/floodplain scrub and streambed. Species used in the restoration effort are appropriate for the anticipated ephemeral nature of the channels.

2.6.2 Financial Assurances

A revegetation agreement shall be signed and notarized by the property owner following approval of this revegetation plan and accompanied by the required security as agreed upon by the County.

2.6.3 Schedule

Because the riparian scrub/floodplain scrub and streambed restoration are proposed to be conducted within graded channels on site, the restoration cannot be implemented until the grading is complete. Restoration would occur immediately upon completion of site grading. Installation would be completed within 3 months of finishing grading of the channels. Maintenance and monitoring would be conducted for 5 years following completion of the installation, or until success criteria are met.

2.6.4 Site Preparation

The grading for the proposed creation and restoration areas will occur concurrently with grading for the Otay Crossings project. Equipment anticipated for creation may include, but is not limited to, a bulldozer, scraper, track loader, excavator, and skip loader.

The goal of grading is to create hydrological conditions appropriate to support native riparian scrub/floodplain scrub and streambed habitats. The restoration will occur in the realigned channels,

HELIX

which have been designed by the project hydrologist to ensure that riparian scrub/floodplain scrub species in the channel bottom will receive winter flows. The overall channel width is 60 feet at the top of the channel for the central channel (Figure 5) and at the top of the restoration channel (Figure 6). A 3- to 5-foot pilot channel will be graded in both the creation and restoration areas. A 3- to 4-foot bench would be graded on either side of the pilot channel in the creation area, and a 10- to 20-foot bench would be graded in the restoration area. The 10-foot channel bottom and adjacent 1 foot of side slopes in the central channel are proposed to be used for riparian scrub/floodplain scrub and streambed creation, with the adjacent side slopes supporting more upland species.

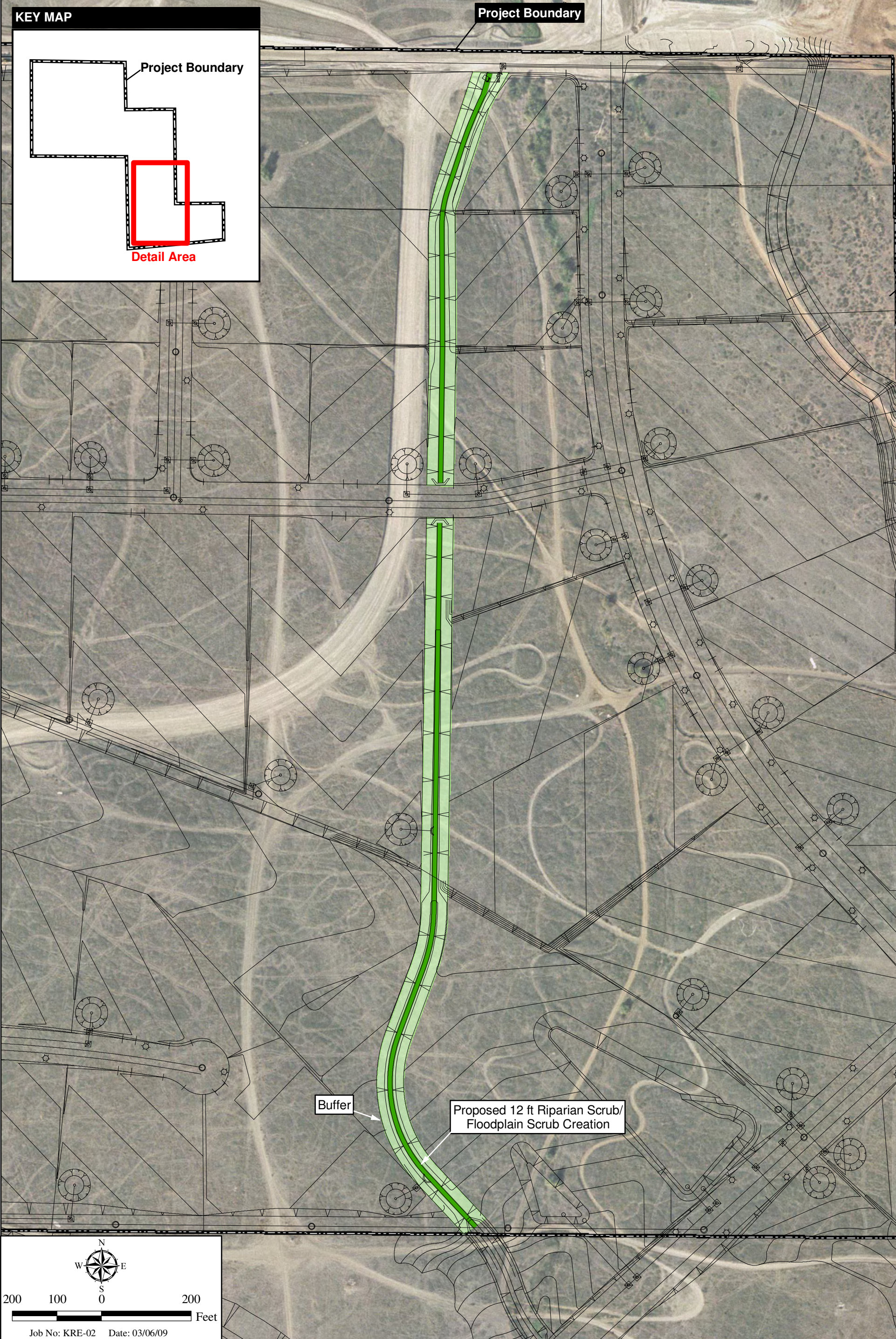
2.6.5 Planting Plan

Riparian scrub/floodplain scrub restoration will consist of the reintroduction of native plant materials in addition to the physical construction described above and will be accomplished through seed collection from native wetland species within and adjacent to the project site. The collected seeds will be labeled and stored in a cool, dry location until they are used in the restoration area. Vegetation also will be established through the introduction of container stock and cuttings from the immediate project vicinity (Tables 4 and 5).

Table 4
RIPARIAN SCRUB/FLOODPLAIN SCRUB SEED MIX*

Scientific Name	Common Name	Lbs/ Acre	% Purity/ Germination	Total Lbs Required
<i>Ambrosia psilostachya</i>	western ragweed	3	4/30	2
<i>Isocoma menziesii</i>	goldenbush	3	10/50	3
<i>Baccharis salicifolia</i>	mule fat	2	10/20	3
<i>Eleocharis macrostachya</i>	spike rush	1	90/70	1
<i>Heliotropium curvassavicum</i>	salt heliotrope	1	20/60	1
<i>Iva hayesiana</i>	San Diego marsh elder	3	35/20	3
<i>Juncus bufonius</i>	toad rush	0.5	95/50	0.5
<i>Juncus mexicanus</i>	Mexican rush	1	95/50	1
<i>Cressa truxillensis</i>	alkali weed	1	--	1
<i>Eleocharis macrostachya</i>	spike-rush	1	80/80	1
<i>Malvella leprosa</i>	alkali mallow	3	05/50	3
<i>Sisyrinchium bellum</i>	California blue-eyed grass	1	95/75	1
TOTAL				20.5

*Special collection of seed from the project vicinity may be required at least 9 months in advance of seeding. Enough seed has been included for 1.0 acre.



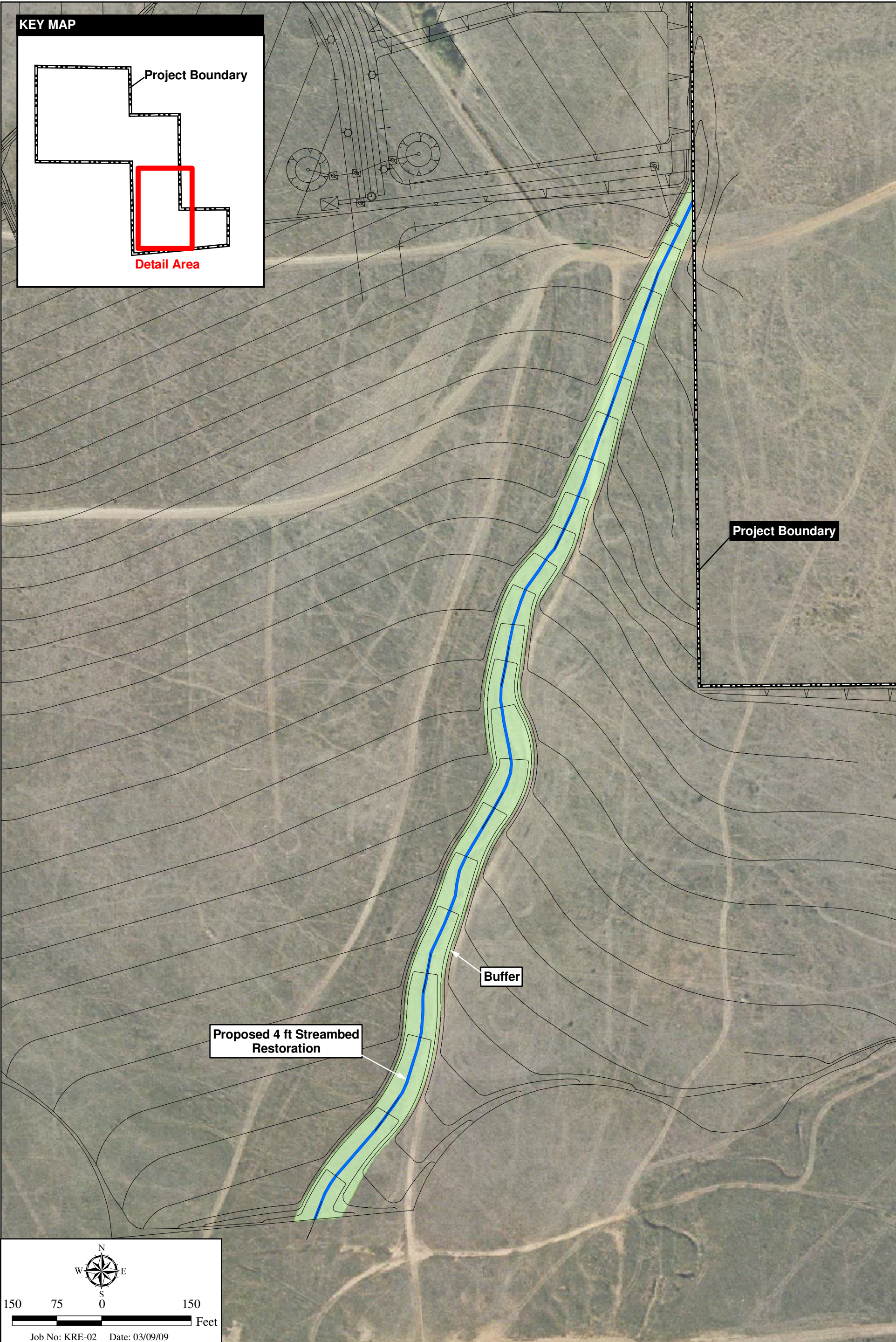
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Central Channel Creation Area

OTAY CROSSINGS COMMERCE PARK



Figure 5



Southeast Channel Restoration Area

OTAY CROSSINGS COMMERCE PARK

Figure 6

Table 5
RIPARIAN SCRUB/FLOODPLAIN SCRUB CONTAINER PLANT PALETTE*

Scientific Name	Common Name	Number Per Acre	Container Size	Spacing on Center (feet)	Total Number
<i>Baccharis salicifolia</i>	mule fat	350	1-gallon	8	350
<i>Distichlis spicata</i>	saltgrass	700	plugs	2	700
<i>Iva hayesiana</i>	San Diego marsh-elder	276	1-gallon	6	276
TOTAL					1,326

*Local collection of propagules from the project vicinity will be required for all species. To grow material to the appropriate size for installation, collection may be required more than 1 year in advance of planting. Enough plants have been included for up to 1.0 acre.

Once the area has been graded and irrigation installation is complete, the restoration areas will be seeded/planted. Nursery-grown container plants and/or cuttings and native seed propagated or collected from on site or nearby sources will be used in this restoration. All seed and container stock must be inspected and approved by the restoration specialist prior to installation. Container stock should be installed in holes that are at least 1.5 times larger than the container. Holes will be dug with mechanical augers where possible and by hand elsewhere. Seed should be hand-spread following planting and raked in.

Because the drainage in the southeast portion of the site is expected to remain as an entirely ephemeral drainage based on the size of the watershed, this drainage will only be seeded.

2.6.6 Irrigation Plan

The goal is to obtain germination and growth with the least amount of irrigation. Irrigation will be limited to the central drainage on site. After the initial plant establishment period, water will be applied infrequently and only as needed to prevent the mortality of plants and seedlings. Frequent irrigation encourages weed invasion and leaches nutrients from the soil. Native plantings that are infrequently irrigated may initially grow slower but will ultimately establish better. The irrigation schedule will attempt to develop deep-root growth by incorporating evenly spaced, infrequent, deep applications of water. The irrigation system may be activated several times in one 24-hour period to obtain deep penetration of water. The irrigation system will incorporate the use of moisture sensors connected to an irrigation controller; this will allow for the application of water on an as-needed basis.

Once the plant material is established and does not require supplemental irrigation, all of the irrigation system will be removed. The restoration specialist will determine how and when the irrigation system is to be removed. Irrigation will be used for the first 3 years or less of the monitoring period. The irrigation system shall be off during the final 2 years of the 5-year maintenance and monitoring period. No irrigation is proposed for the restoration area.

2.7 MAINTENANCE DURING MONITORING

2.7.1 Maintenance Activities

A 5-year maintenance program is proposed to ensure the successful establishment and persistence of the riparian scrub/floodplain scrub and streambed. The maintenance program will involve removal of trash, weed control, irrigation maintenance, and any remedial measures deemed necessary for the success of the restoration program (e.g., re-seeding and re-planting). Maintenance activities will be directed by the restoration specialist.

2.7.1.1 General Maintenance

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired as directed by the restoration specialist. The cost of such repairs will be paid for as extra work. The contractor will be responsible for damage caused by the contractor's inadequate maintenance or operation of irrigation facilities as determined by the restoration specialist.

It is the maintenance contractor's responsibility to keep all planted areas free of debris and to monitor irrigation function and scheduling, plant material condition and health, weeding, and erosion control. The maintenance contractor also will be responsible for replacing any dead or terminally diseased plants (within the wetland creation area) at the direction of the restoration specialist. Fertilizer will only be applied in extraordinary circumstances and only at the written direction of the restoration specialist. No post-installation pruning is necessary unless otherwise directed by the restoration specialist.

Pests will be tolerated unless they pose a significant threat to project success. If deemed necessary, a licensed pest control adviser will make specific pest control recommendations. All applicable federal and state laws and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

These maintenance guidelines are tailored to native plant establishment. Maintenance personnel will be informed of the habitat restoration program so that they understand the goals of the effort and the maintenance requirements. A professional with experience and knowledge in native habitat restoration maintenance will supervise all maintenance.

2.7.1.2 Non-native Plant Control

Particular emphasis will be placed on pro-active weed control. There will be a very low tolerance for weed species within the restoration areas. Weed eradication will be conducted as necessary to minimize competition that could prevent the establishment of native species. As weeds become evident, they should be removed by hand or controlled with the proper herbicides. The restoration specialist will oversee weed control by the maintenance contractor. Maintenance personnel will be trained to distinguish weed species from desirable native vegetation.

A cleared space of 18 inches from the base of each container plant will be maintained to minimize competition from other plants during the establishment period or until plants reach 3 feet in height. A mulch of chipped plant materials will be used to help maintain this weed-free area.

2.7.1.3 Invasive Plant Control

In addition to the general weed control effort described above, certain highly invasive plant species have been targeted for complete eradication within the restoration areas: fennel, pampas grass (*Cortaderia* sp.), giant reed (*Arundo donax*), artichoke thistle (*Cynara cardunculus*), and tamarisk. These species are rated as either High or Moderate in the California Invasive Plant Inventory prepared by Cal-IPC (2006), which includes highly invasive pest plants that have been documented as aggressive invaders that displace natives and disrupt natural habitats. There will be no tolerance for these species within the restoration area. Additional species may be added to this list if found to be a threat to the long-term success of the restoration effort.

2.7.1.4 Other Pests

Insects, vertebrate pests, and diseases will be monitored. Generally speaking, a high threshold of tolerance will be permitted before control measures are considered. Only a licensed pest control adviser as required by law will make specific recommendations. All applicable federal and state laws and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

2.7.1.5 Fertilization

Fertilizer will not be applied except in extraordinary circumstances and only at the written direction of the restoration specialist.

2.7.1.6 Pruning

No post-installation pruning is necessary unless otherwise directed by the restoration specialist.

2.7.1.7 Sensitive Species Issues

Maintenance activities will not include use of heavy equipment or vehicles and as such are not anticipated to have adverse effects on sensitive species. Nonetheless, all maintenance activities will be carried out under the direction of the restoration specialist, as necessary, in order to avoid any impacts to sensitive species.

2.7.2 Schedule

Following installation, a restoration specialist will monitor maintenance activities conducted by the maintenance crews during the 5-year maintenance and monitoring period (Table 6). Regular maintenance, trash removal, and weed control would be conducted during the first 5

years following implementation of the mitigation program or until the mitigation program is deemed successful.

The initial 90-day establishment period (if required) will occur within the first 3 months of the 5-year period. Monitoring visits will be conducted monthly during Year 1. In Year 2, visits will be conducted monthly from December through May and two times in the remainder of the year

(July and September). Quarterly visits (March, June, September, and December) will be conducted during Years 3 through 5. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with contractor performance or habitat development.

Table 6 MAINTENANCE MONITORING SCHEDULE	
PHASE	SCHEDULE
Installation	
Site preparation and installation	Daily
Post Installation	
Year 1	Monthly
Year 2	
December to May	Monthly
June to November	Twice: July and September
Years 3 to 5	Quarterly: March, June, September, and December

Monitoring memos noting any issues with plant establishment, irrigation, sediment control, etc., will be provided as necessary to the installation/maintenance contractor(s) and project proponent(s).

2.8 MONITORING PLAN

2.8.1 Performance Standards for Target Dates and Success Criteria

The following standards will be used to determine the successful completion of the 5-year mitigation and monitoring program. Attainment of these standards indicates the mitigation areas are progressing toward the habitat functions and values specified for this plan. Methods used to measure these success criteria are described in the following text. The CDFG, Corps, RWQCB, and County may terminate monitoring earlier than 5 years if success criteria are met and it is recommended by the restoration specialist in a year-end report. Likewise, if the restored areas fail to meet the Year 5 standards after the full monitoring term, a specific set of remedial measures (approved by the CDFG, Corps, RWQCB, and County) would be implemented, and the monitoring

HELIX

and maintenance period would be extended until all Year 5 standards are met or as otherwise provided in this document. Only areas failing to meet the success standards would require additional work (i.e., not all of the areas originally restored).

Technical monitoring will include both qualitative (visual assessment) and quantitative (transect data collection) sampling within the riparian scrub/floodplain scrub area. This sampling will include assessments of cover (native and non-native), height of tree and shrub species, site hydrological characteristics, and lists of wildlife and plant species observed on site each year. In Years 1 and 2, monitoring will be qualitative in nature and be based on a visual and photographic survey of the restoration areas. In Years 3 through 5, quantitative transect monitoring will be conducted in the wetland restoration areas. Success criteria milestones are provided below.

Only qualitative sampling is proposed for the streambed restoration area in the southeast drainage.

Species Richness

Species richness is the number of native species present in a given area. During the annual monitoring, species richness within the restoration areas will be determined by visual assessment only in Years 1 and 2. Species richness within the restoration areas will be determined within the belt and point intercept transects in Years 3 through 5. Annual success criteria for species richness for native species vary by year and habitat type (Table 7). If the species richness goal for a given year is not met, corrective measures (e.g., reseeding, planting, etc.) will be taken to ensure eventual achievement of the 5-year goal.

Table 7 SPECIES RICHNESS SUCCESS CRITERIA*			
HABITAT	YEAR 3†	YEAR 4	YEAR 5
Riparian scrub	4	4	5

*No success criteria for Years 1 and 2

†Values represent number of native species

No species richness goals are targeted for the unvegetated streambed restoration.

Vegetative Cover

Native and non-native (weed) plant species cover will be measured to assess project success. Annual performance goals have been set to track the progress of the mitigation effort. No specific cover criteria have been established for Years 1 or 2. For Years 3, 4, and 5, the native species cover will vary by habitat and strata (Table 8). If the annual goals for native and non-native cover are not met, additional measures (e.g., reseeding, planting, weeding, etc.) will be taken as necessary to ensure final success.

Table 8 VEGETATIVE COVER SUCCESS CRITERIA (percent)			
HABITAT/PARAMETER	YEAR 3	YEAR 4	YEAR 5
Created Riparian Scrub			
Total cover	30	40	50
Shrub cover	20	25	30
Herb cover	30	30	30
Invasive weed cover*	0	0	0

*Limited to Cal-IPC High or Moderate rated species

No native vegetative cover goals are targeted for the unvegetated streambed restoration.

Non-native/Invasive Plant Cover

Weeds are typically a problem in habitat restoration projects, particularly at their outset. The areas designated for habitat creation are disturbed and support a large number of weeds. As the restoration takes hold, weed problems should decrease. Although weeds are expected to be a problem, focused maintenance efforts should reduce weed cover to an acceptable level. All Cal-IPC High- or Moderate-rated species will be included in the weed control effort. A total of 4 species rated as High or Moderate by the Cal-IPC Invasive Plant Inventory have been targeted for complete eradication within the restoration areas (created and enhanced) on site: fennel, pampas grass, giant reed, and tamarisk. There will be no tolerance for these species within the restoration areas. At the end of the 5-year maintenance and monitoring period, the acceptable cover value for each of these 4 species will be 0. Additional species may be added to this list if found to be a threat to the long-term success of the restoration effort. Weeds will be controlled as specified in the maintenance monitoring section. At the end of the 5-year monitoring period, weed species shall account for no more than 10 percent of the created riparian scrub/floodplain scrub habitat and unvegetated streambed cover.

Irrigation

To provide evidence that vegetation is self-sufficient, direct irrigation of the restoration areas must be shut off at least 2 years prior to the end of the maintenance/monitoring period.

2.8.2 Target Functions and Values

Upon meeting success criteria, the riparian scrub/floodplain scrub and streambed creation areas will provide at least 0.97 acre of wildlife habitat for birds, nutrient removal and cycling, and flood control functions. Values would include flood abatement and pollutant uptake, as well as aesthetics and perpetuation of sensitive species (San Diego marsh-elder).

2.8.3 Target Hydrological Regime

The riparian scrub/floodplain scrub and streambed restoration is designed to convey runoff through the project site and is expected to have a hydrologic regime defined by peaks of flow

HELIX

during and after winter rain events and varied amounts of intermittent flows generated by urban/irrigation runoff during the remainder of the year. Flows should be sufficient to support riparian scrub/floodplain scrub vegetation but may also cause scour during intense rainfall events, as well as redistribution of detritus such as debris jams or drift lines.

2.8.4 Target Acreages

The target acreage of riparian scrub/floodplain scrub and streambed mitigation is 0.97 acre, consisting of creation in the central drainage and restoration in the southeastern channel.

2.8.5 Monitoring Methods

Monitoring would be carried out under the direction of the restoration specialist to assess the progress of the restoration effort and determine any appropriate remedial measures. Quantitative success criteria presented above would be used to measure mitigation success. Final and yearly success criteria are included to measure interim and ultimate habitat development. If annual goals are not being met, corrective measures would be implemented. Corrective measures for riparian scrub/floodplain scrub may include but are not limited to re-seeding with collected or commercially available seeds from the immediate area or replanting container stock. Prior to conducting any remedial measures outside of this plan, the Corps, CDFG, RWQCB and County would be notified.

A total of four 50-meter transects will be used to collect data for the technical monitoring within the riparian scrub/floodplain scrub creation areas. The transects will be randomly located during the first quantitative sampling event (to occur in Year 3), and permanently marked with rebar to facilitate their use in subsequent years. Species data will be collected along each transect using the point intercept line transect sampling methods described in the California Native Plant Society's Field Sampling Protocol (Sawyer and Keeler-Wolf 1995). Species cover data will be collected by recording all of the species intercepted at each 0.5-meter interval along the length of each transect. Vegetation will be recorded separately for herb (0 to 0.6 meter), shrub (0.6 to 2 meters), and tree (greater than 2 meters) layers. Species richness data will be collected by noting all species occurring within 5 meters of each transect.

Wildlife usage of the restoration area will be monitored every May by walking 3 transects along the length of the restoration site and identifying all animals by sight, sign, or vocalization. The number of individuals and species detected shall be recorded.

In addition to the qualitative and quantitative monitoring, several permanent stations for photo documentation will be established prior to installation. Photos will be taken as part of all 5 annual monitoring events and will be included in the respective year's annual report. An aerial photo of the restoration area will also be included in the annual report.

An annual report will be prepared each year during the 5-year monitoring period. The first 2 annual reports will be based on qualitative assessment data and focus on what (if any) adjustments are necessary to ensure ultimate success of the mitigation project. For Years 3 through 5, the annual reports will use quantitative data to determine success of the mitigation

effort. Each report will evaluate the success of the mitigation effort to date, along with any recommendations for future work that may be deemed necessary.

2.8.6 Monitoring Schedule

Monitoring events focusing on the collection of botanical data would occur annually for 5 years. A reduction/increase in the 5-year monitoring may be permitted/required if success criteria are/are not met within the 5-year period.

2.8.7 Monitoring Reports

As part of the monitoring program, annual reports would be submitted to the County, Corps, CDFG, and RWQCB no later than the first week of January and would evaluate the success of the riparian scrub/floodplain scrub and streambed mitigation effort to date, along with providing any recommendations for future work that may be deemed necessary. Each annual monitoring report would include data collected throughout the year in addition to the annual monitoring visit and would include qualitative and quantitative analyses. To detect the overall trend of the site, the annual monitoring report would contain comparisons of the monitoring data for the years that data are collected. The Corps, CDFG, RWQCB, and County shall be annually invited to view the mitigation site. Any significant issue or contingency that arises on the job site (e.g., plant survival issues, fire, or flooding) shall be reported in writing to the Corps, CDFG, RWQCB, and County within 2 weeks from the date of the incident. Accompanying the report shall be a plan for remediation, with an implementation schedule and a monitoring schedule.

2.9 COMPLETION OF COMPENSATORY MITIGATION

The permittee shall notify the Corps, CDFG, RWQCB, and County of completion of the mitigation effort through submittal of a final (Year 5) monitoring report. The final monitoring report would include a jurisdictional delineation of the mitigation areas. This delineation must show that the goals of the mitigation program have been met. After receipt of the final monitoring report, the Corps, CDFG, RWQCB, and County may inspect the mitigation site to determine the success of the restoration effort. After evaluating the final report, the agencies shall determine if the restoration effort is acceptable.

2.10 CONTINGENCY MEASURES

2.10.1 Initiating Contingency Measures

If the Corps, CDFG, RWQCB, and County determine upon receipt of any of the annual monitoring reports that the restoration effort is not meeting success standards for the project, the Corps, CDFG, RWQCB, and County shall notify the project proponent in writing that the restoration effort may require augmentation for successful implementation. The project proponent shall then have 30 days to respond to the notification. During this period, the project proponent may discuss alternatives to the suggestions of the Corps, CDFG, RWQCB, and County.

HELIX

2.10.2 Alternative Locations for Contingency Compensatory Mitigation

Alternative locations for the riparian scrub/floodplain scrub habitat are not present off site. If the success criteria are not being met on site, the Corps, CDFG, RWQCB, and County will work together with the permittee(s) to reach an alternative, mutually acceptable solution.

2.10.3 Funding

The permittee shall be responsible for all costs associated with any remedial measures.

3.0 REFERENCES

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APPENDIX A

ANIMAL SPECIES OBSERVED

Appendix A
ANIMAL SPECIES OBSERVED – OTAY CROSSINGS COMMERCE PARK

SCIENTIFIC NAME

COMMON NAME

INVERTEBRATES

<i>Anthocharis sara</i>	Sara orangetip
<i>Apodemia mormo virgulti</i>	Behr's metalmark
<i>Branchinecta sandiegonensis</i> †	San Diego fairy shrimp
<i>Brephidium exilis</i>	western pygmy blue
<i>Coenonympha californica</i>	common California ringlet
<i>Erynnis funeralis</i>	funereal duskywing
<i>Euphydryas editha quino</i> †	Quino checkerspot butterfly
<i>Glaucopsyche lygdamus australis</i>	southern blue
<i>Junonia coenia</i>	buckeye
<i>Papilio eurymedon</i>	pale swallowtail
<i>Papilio zelicaon</i>	Anise swallowtail
<i>Pieris rapae</i>	cabbage butterfly
<i>Plebejus acmon</i>	Acmon blue
<i>Pontia protodice</i>	common white
<i>Pyrgus albescens</i>	common checkered skipper
<i>Streptocephalus woottoni</i> †	Riverside fairy shrimp
<i>Vanessa annabella</i>	west coast lady
<i>Vanessa cardui</i>	painted lady

VERTEBRATES

Amphibian

<i>Spea hammondi</i> †	western spadefoot
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Reptiles

<i>Cnemidophorus hyperythrus beldingi</i>	orange throated whiptail
<i>Cnemidophorus tigris multiscutatus</i> †	coastal western whiptail
<i>Sceloporus occidentalis</i>	western fence lizard
<i>Thamnophis hammondi</i>	two-striped garter snake

Birds

<i>Agelaius phoeniceus</i>	red-wing blackbird
<i>Ammodramus savannarum</i> †	grasshopper sparrow
<i>Athene cunicularia</i> †	burrowing owl
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Carduelis psaltria</i>	lesser goldfinch
<i>Carduelis tristis</i>	American goldfinch

Appendix A (cont.)

ANIMAL SPECIES OBSERVED – OTAY CROSSINGS COMMERCE PARK

SCIENTIFIC NAME

COMMON NAME

VERTEBRATES (cont.)

Birds (cont.)

<i>Carpodacus mexicanus</i>	house finch
<i>Charadrius vociferus</i>	killdeer
<i>Chordeiles acutipennis</i>	lesser nighthawk
<i>Circus cyaneus</i> †	northern harrier
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
<i>Elanus leucurus</i> †	white-tailed kite
<i>Eremophila alpestris actia</i> †	California horned lark
<i>Falco sparverius</i>	American kestrel
<i>Hirundo pyrrhonota</i>	cliff swallow
<i>Icterus bullockii</i>	Bullock's oriole
<i>Lanius ludovicianus</i> †	loggerhead shrike
<i>Mimus polyglottos</i>	northern mockingbird
<i>Passer domesticus</i>	house sparrow
<i>Passerina caerulea</i>	blue grosbeak
<i>Pipilo crissalis</i>	California towhee
<i>Sayornis nigricans</i>	black phoebe
<i>Sturnella neglecta</i>	western meadowlark
<i>Sturnus vulgaris</i>	European starling
<i>Tyrannus verticalis</i>	western kingbird
<i>Tyrannus vociferans</i>	Cassin's kingbird
<i>Zenaidura macroura</i>	mourning dove
<i>Zonotrichia leucophrys</i>	white-crowned sparrow

Mammals

<i>Spermophilus beecheyi</i>	California ground squirrel
<i>Sylvilagus audubonii</i>	desert cottontail
<i>Thomomys bottae</i>	Botta's pocket gopher

†Sensitive species